PESMA INTERNATIONAL KH. MAS MANSYUR LAUNDRY INFORMATION SYSTEM

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PESMA INTERNATIONAL KH. MAS MANSYUR LAUNDRY INFORMATION SYSTEM

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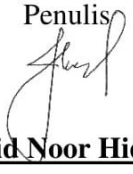

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Abstrak

Pondok Pesantren Internasional KH Mas Mansyur memiliki fasilitas laundry untuk santri. Proses administrasi masih dilakukan secara manual sehingga mahasiswa kesulitan mendapatkan informasi transaksi secara langsung. Berdasarkan permasalahan tersebut, penelitian ini bertujuan untuk membuat sistem informasi berbasis web. Tujuannya, sistem ini akan membantu proses administrasi menjadi lebih efisien dan memudahkan mahasiswa dalam mengakses informasi terkait laundry. Sistem ini dikembangkan menggunakan bahasa pemrograman Python dengan framework Django dan MySql sebagai database pengolah. Hasil akhir dari penelitian ini adalah sistem informasi berbasis web yang dapat memberikan informasi bagi mahasiswa dan memberikan kemudahan untuk administrasi laundry

Kata kunci: Sistem laundry. Sistem Web. Sistem Informasi. Administrasi. Pengembangan perangkat lunak

Abstract

KH Mas Mansyur International Islamic Boarding School has laundry facilities for students. The administrative process is still done manually so that students have difficulty getting transaction information directly. Based on these problems, this study aims to create a web-based information system. The purpose is, this system will help the administrative process to be more efficient and make it easier for students to access information related to laundry. This system develops using Python programming language with Django framework and MySql as the processing database. The final result of the research is a web-based information system that can provide information for students and provide facilities for laundry administration

Keywords: Laundry system. Web System. Information system. Administration. Software Development

1. INTRODUCTION

Information technology is a set of tools that help you work with information and perform tasks related to processing (A. Kadir & T.C. Triwahyuni, 2013). Information technology is a field that is rapidly developing. The many conveniences offered to make information technology more widespread in its application. Not only for large-scale companies, but small and medium-sized companies are starting to apply it. Because of the many advantages offered in terms of consistency, efficiency, and accuracy in processing large amounts of data

The International Student Islamic Boarding School KH Mas Mansur (Pesma) Universitas Muhammadiyah Surakarta (UMS) is an institution owned by UMS and under Lembaga Pengembangan Pondok Al-Islam dan Kemuhammadiyahan (LPPIK) (B. Khafid, 2020). Pesma provides by UMS for students who are interested in stay and study. There are several facilities given by Pesma, one of which is laundry facilities for students. Every month students get a quota of 10 kilograms. Students simply insert the clothes into a bag that has been given by Pesma, then bring the bag to the room Laundry. The laundry bag will be picked up by the clerk and delivered back to Pesma when the process finishes. Students who exceed the quota limit will be charged according to the weight that exceeds the quota.

Students who have not paid the additional fee, their clothes will be detained by the laundry clerk. All transactions are still processed manually using paper. In the process, several problems arose. One of them, students do not know that the quota has been exhausted. Another problem is that the student's laundry clothes are mixed with other student's laundry clothes whose owner is unknown

The lack of student information in laundry transactions is a problem in laundry management. Students do not know the remaining quota they have. Meanwhile, the laundry manager cannot inform students whose quota has run out. Another problem is when a student is looking for his lost clothes or wants to inform the clothes he found, cannot give or receive information directly.

several problems found in the management of laundry, the use of an information system is expected to facilitate the delivery of information, make it easier for laundry managers to manage student data to be more efficient. Several previous studies regarding the development of information systems at Pesma include the Night Attendance Information System Development At International Islamic Boarding School KH Mas Mansyur (H. Purwanda, 2019). In this research, researchers created a mobile and web-based student licensing system. Making the system using the programming language PHP and Java then MySQL as a database processor. In testing the system on user comfort, 86.15% (40% strongly agree and 46.15% agree) agree that the system brings comfort to users. Then there is another study entitled Information System-Based Automated Tutor Attendance Using barcode Scanner In International Boarding School Pesma KH Mas Mansyur (R. Fahmi, 2018). In this study, researchers built a tutor

attendance automation system using a web-based barcode scanner. The system developed using the PHP programming language. The results of the study, the researcher concludes that this system helps increase tutor attendance and reduces tedious tutor work. Different from the previous research, in terms of making the system, this research uses the Python programming language with the Django framework. Meanwhile, in terms of features, this research has a feature that allows students to exchange information with fellow students for finding or announcing the clothes found

Previous research designed a laundry information system with the title Sistem Informasi Jasa Laundry Berbasis Web Pada Laundry Keisya Karawang (A. Nuraini, 2016). The system developed using the PHP programming language. The results of this determination are, it is easy to convey information to the public about laundry. The information is accessed quickly and customers can access information anywhere and anytime. What distinguishes the current study from previous research is the programming language used in this study uses Python and features for laundry users who can interact with other users in the lost and found menu.

2. METHOD

The research method used in the development of this system is the waterfall method. The waterfall model is one of the software development models contained in the SDLC (Sequential Development Life Cycle) model. According to Sukamto and Salahuddin (2013), SDLC is the process of developing or changing a software system by using the models and methodologies used by people to develops previous software systems, based on best practices or well-tested methods. The purpose of this study is to provide direct access to information about the laundry transaction process.

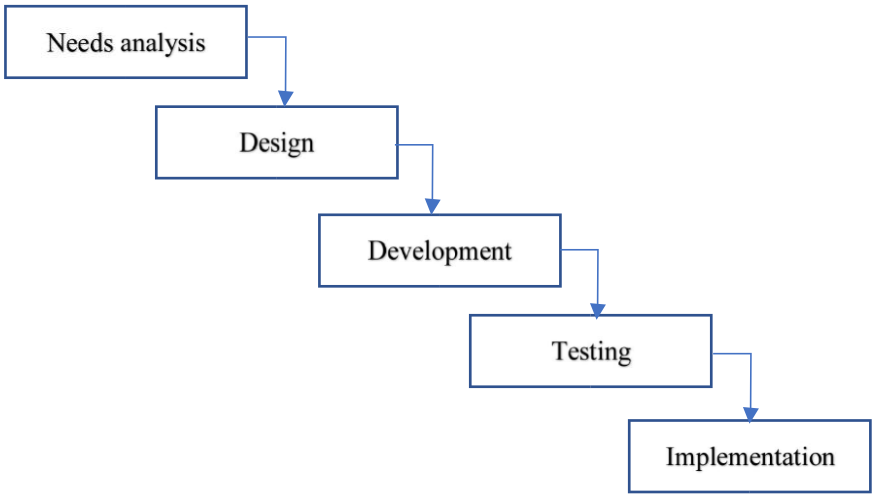


Figure 1. Waterfall model

2.1 System Requirements Analysis

To design the system according to user requirements. Information about business processes is required. The information found by observing and interviewing sources who are directly involved with the business process.

2.2 Business Flow

From the results of the needs analysis, several business process flows were found, namely the flow of student users, Pesma admins, and laundry admins. Then the explanation of each business flow is as follows.

2.2.1 Student Business Flow

A student who wants to do laundry puts the clothes into the laundry bag provided by Pesma. Outside the laundry bag written the student identity such as name, NIM, and room number.

Then the students put the bag in a laundry room. The laundry clerk will take the bag and then take it to the laundry processing area. After the clothes arrive at the laundry processing area, the laundry clerk will weigh the clothes. Then the clothing weight data is entered into the system with the NIM written on the laundry bag as transaction data. After the data entry to the system, students can see running transactions, whether the laundry sent is still covered quota. Laundry clothes that have exceeded the quota will still be processed, but students must pay the exceeded first. Otherwise, the clothes don't deliver to the student until paid. If the weight of the

clothes covered by the quota, the clothes processed. When the process is finished, the clothes delivered to the laundry room.

After the laundry clothes are received by the student, the process is complete. However, if the student gets an excess or there are missing clothes, the student can look at the laundry system in the browser. The system provides a list of lost and found clothes. For the lost menu, there is a list of missing clothes with some information. The student can add the lost clothes list. In the found menu, there is a list of found clothes with the explanation. The student can add the lost clothes list. If the student cannot find his missing clothes on the list, he can complain by filling out the complaint form. The laundry owner will be responsible give the compensation according to the regulations when the lost clothes are not found.

2.2.2 Pesma Admin Business Flow

In the new academic year, Pesma KH Mas Mansyur accepts new students who will live in Pesma. The data of new students has not been entered into the laundry system yet, the admin needs to input the new student data into the system, which will be used for the laundry process. Then the admin of Pesma also responsible for receiving complaints when students are having problems during the process of laundry or the student activation.

2.2.3 Laundry Admin Business Flow

The laundry will be check by the clerk daily. The task of the laundry clerk begins when the student puts the clothes in the laundry room. The clothes will be taken by the clerk for the process. The first process is to weigh the clothes of each student, then input the data into the system by adding a transaction to the system. After the data has been input, the student can check the status of the clothes it is processed or canceled. After the process is complete, the clothes are sent to the Pesma and place in the laundry room, then the laundry admin will change the status of the transaction into status complete, and the student can take their clothes.

2.3 Usecase

A use case is a description of a possible sequence of interactions between the system under discussion and its external actors, related to a specific goal (A. Cockburn, 1999). In a system that is designed there is a processing flow. Each plot has a purpose and

function, then becomes a complete system. Below is an explanation of each use case for the Pesma KH Mas Mansyur laundry system.

Table 1. List of use case

No	Use case	Explanation
UcA 001	Admin login	The admin login via the form on the main page.
UcA 002	View student data	The Pesma admin sees the data of students in the system.
UcA 003	enter student data	The Pesma admin enters student data into the System.
UcA 004	Edit student data	The Pesma admin edits the data of students who already exist in the system.
UcA 005	Change password	The Admin changes the password on the system.
UcA 006	Add quota	The admin adds quota for students.
UcA 007	Restart quota	The Pesma admin returns the quota at the initial quota.
UcA 008	View lost information	The laundry admin sees the data clothes were missing from the student report.
UcA 09	Add transaction	The laundry admin adds transactions to the system.
UcA 010	view transaction data	The laundry admin views laundry transaction data.
UcA 011	see statistics	The laundry admin views transaction statistics.
UcA 012	back up	Admin back up data to the excel that automatically downloaded as a .xls file.
UcM 001	student login	The student login via the login form to enter the system.
UcM 002	view quota	The student views quotas on the system.
UcM 003	view transactions	The student views transactions on the transaction menu.
UcM 004	Add lost announcement	The student looks at the menu of complaints that contain clothes missing and clothing found.
UcM 005	Add found announcement	The student enters the clothes were lost in the laundry process.
UcM 006	Enter found items	The student enters the data of clothes found.

2.3 Laundry transaction flow

This laundry information system is based on the processes that occur in the daily management of laundry clothes.

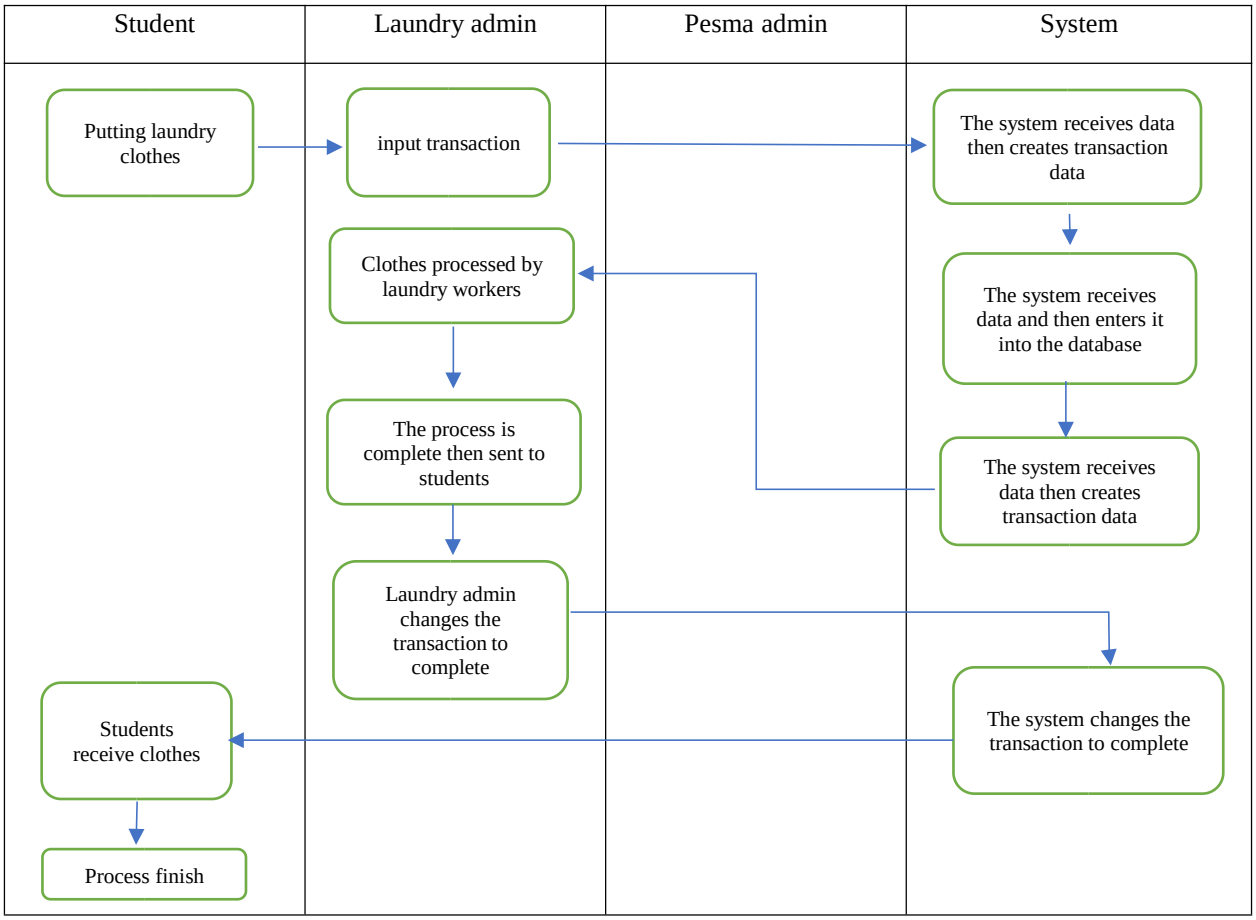


Figure 2. Laundry transaction flow

2.4 Design

The design phase is the process of planning and problem solving to make the software system a solution (Y. Bassil, 2012). This design will be a reference for making the system as a whole. Include use case diagram design that will describe and design a series of interactions between users and activities carried out in the system. In addition, there is an ER diagram design that describes the interaction between entities and data flows in the system

2.4.1 Use Case Diagram

Use case diagrams are used to model the activities of the system to be created. The use case will describe the activities carried out by the actor. This use case diagram is taken from the process flow. There are several actors, namely Pesma admin, Laundry admin, and students. To enter the system, each actor must log in first

Figure 3. Usecase diagram

2.4.2 ER diagram

ER diagram is made to describe the process of data flow and the relationship of each entity in the system. From the existing process flow, we get several entities for the process of the system to be created, namely Admin, students, clothes, and complaints

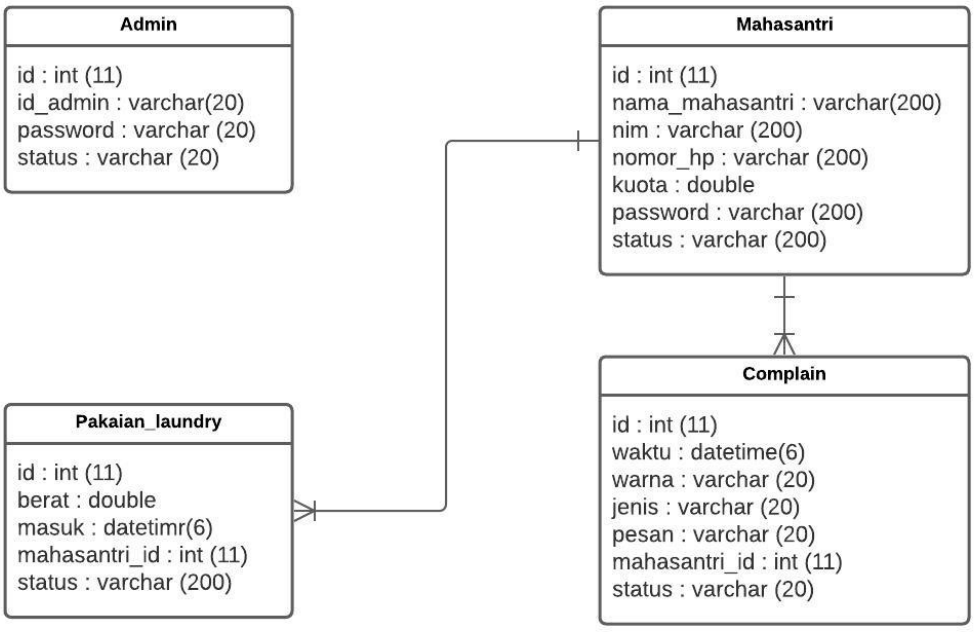


Figure 4. ER diagram

3. RESULT AND DISCUSSION

Software testing is carried out to provide information to stakeholders about the quality of the product being tested. (Y. Singh, 2011). Testing this information system is carried out in two stages, system testing using black box testing and User acceptance test.

3.1 Black box Testing

Black box testing is done to minimize errors from every function in the system. The results of the black box testing for each function are shown in the table below

Table 2. Blackbox testing result.

No	Use case	Input	Output	Result
UcA 001	admin login	The admin login via the form on the main page	The Admin login to the system.	Ok
UcA 002	View student data	The Pesma admin see the data of students who are in the system	The pesma admin is on the student data menu.	Ok
UcA 003	enter student data	The Pesma admin enters student data into the System	The student data is stored in the system.	Ok
UcA 004	Edit student data	The Pesma admin edits the data of students who already exist in the system	Student data is changed and then stored into the system.	Ok
UcA 005	Change password	The Admin changes the password on the system	Admin password changed.	Ok

UcA 006	Add quota	The admin adds quota for students	The student quota increases according to what is added.	Ok
UcA 007	Restart quota	The Pesma admin returns the quota at the initial quota	All student quotas are changed to initial quotas.	Ok
UcA 008	View lost information	The laundry admin sees the data clothes were missing from the student report.	The system displays data on lost and found clothes that have been reported by students.	Ok
UcA 009	Add transaction	The laundry admin adds transactions to the system	Transactions are stored in the system.	Ok
UcA 010	view transaction data	The laundry admin views laundry transaction data	The system displays transaction data.	Ok
UcA 011	see statistics	The laundry admin views transaction statistics.	The laundry admin sees transaction data per day.	Ok
UcA 012	back up	Admin back up data to the excel that automatically downloaded as a .xls file.	Data transactions downloaded as .xls file.	Ok
UcM 001	view quota	The student login via the login form to enter the system	System displays quota data	Ok
UcM 002	Lost clothes	The student views quotas on the system	The system displays lost clothes data	Ok
UcM 003	Clothes found	The student views transactions on the transaction menu	The system displays the data found clothes	Ok
UcM 004	view transactions	The student looks at the menu of complaints that contain clothes missing and cloth found.	The system displays transaction data on the transaction menu	Ok
UcM 005	enter lost items	The student enters the clothes that are lost in the laundry process.	Lost clothing data is stored in the system	Ok
UcM 006	enter found items	The student enters the data of clothes found.	The found clothes data is stored in the system.	Ok

3.1.1 Student data menu (UcA 002, UcA 003, UcA 004, UcA 005, UcA 006, UcA 007) The menu will be displayed after the Pesma admin login into the system. In this menu, the Pesma admin can add students, add student quotas, change password, restart quota, change status, and edit student data.

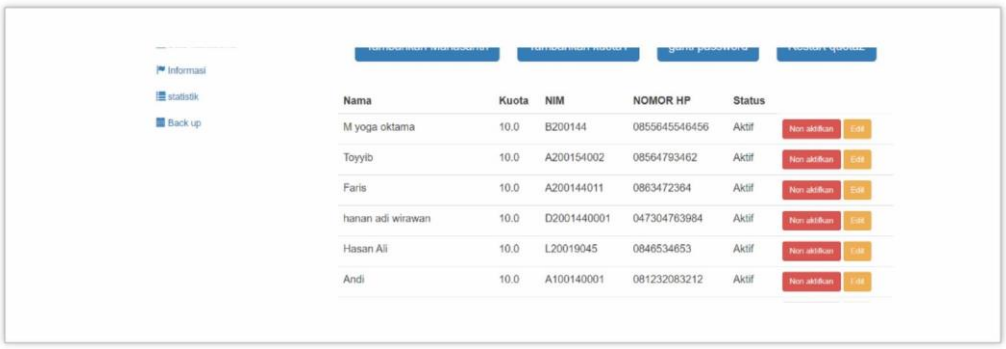
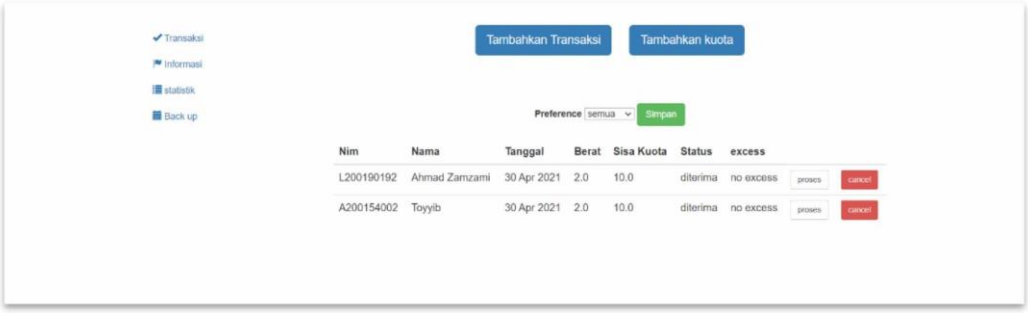


Figure 5. Student data menu

3.1.2 Transaction (UcA 006, UcA 009, UcA 011)

The menu contains transaction data. On this menu, the laundry admin can add transactions, add student quota, and change transaction status.



Gambar 6. Transaction data

3.1.3 Lost information (UcA 008)

On the menu lost information, the admin will be able to see the data of lost and found information.

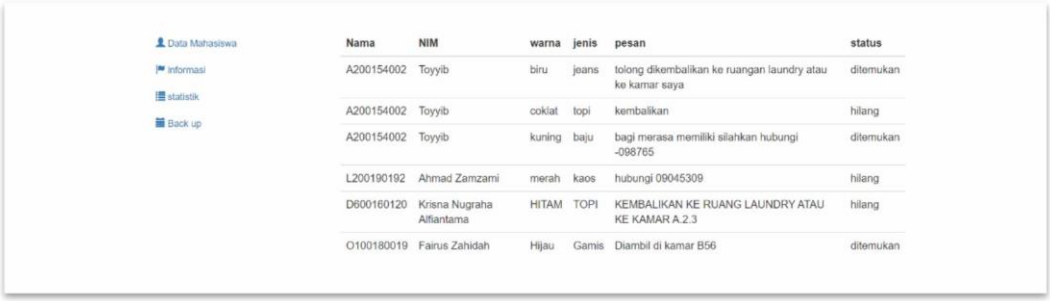
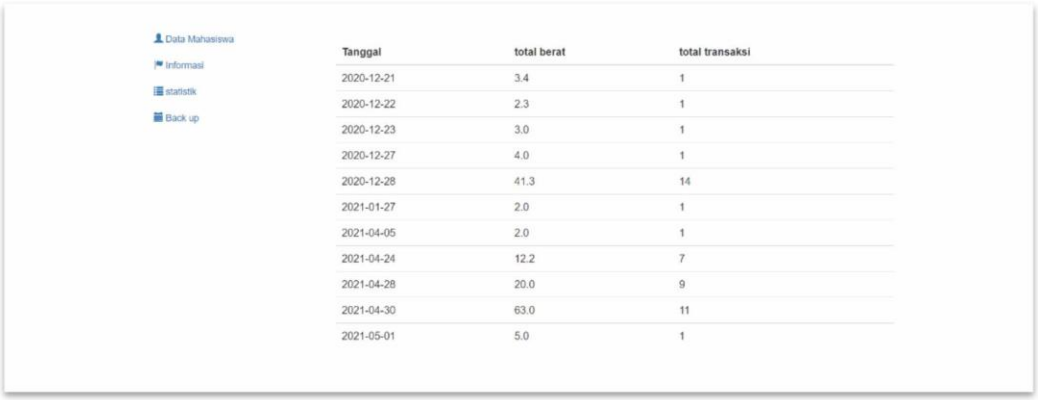


Figure 7 . Lost information

3.1.4 Statistik (UcA 011)

The statistics menu provides information about the accumulated weight of daily transaction data and transaction numbers presented in a table.



Gambar 8. Statistics

3.1.5 Back up (UcA 012)

This menu provides a facility to backup transaction data and downloaded it in the .xls file.

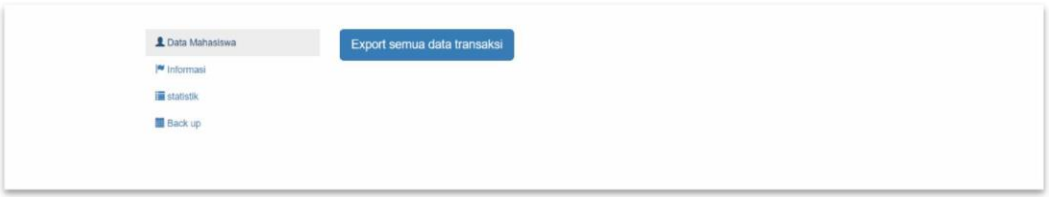


Figure 9. Backup

3.1.6 Student profile (UCM 001)

This menu is faced by students after logging in. this menu contains the name, NIM, mobile number, and the remaining quota.

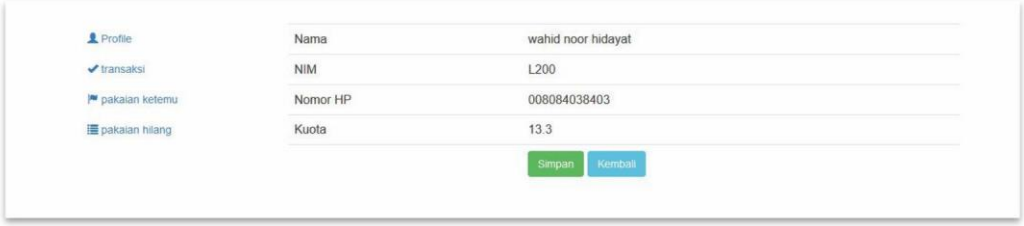


Figure 10. Student profile

3.1.7 Student transaction (UCM 004)

This menu contains information related to transactions owned by students.

Figure 11. Student transactions

3.1.8 Clothes found (UcM 003, UCM 006)

This menu contains information about clothing findings announced by students. The student can add information and delete the information when the announcement is no longer needed.

Figure 12. Clothes found

3.1.9 Lost clothes (UcA 002, UCM 005)

This menu contains information about lost clothes announced by students. The student can add information and delete the information he added when the announcement is no longer needed.

Figure 13. Lost clothes

3.2 User acceptance test

Testing the level of acceptance of users by testing the system directly to the users and then conducting surveys through questionnaires. Testing is done by asking the users to try out the system that has been created then the prospective users are asked to fill out a questionnaire that has been prepared to determine the level of user satisfaction as well as the basis for developing the system that has been created. A common method for measuring software quality is based on exploiting the capability maturity model, which

provides a framework for continuous improvement processes based on the maturity level of an organization's software development process (Quintal, Clara, Macías, & Jose, A., 2021). The list of questions is in the next table.

Table 3. Table Questionnaire Questions.

No	Question code	Question
1	Q1	Does this information system look interesting?
2	Q2	Is this information system easy to use?
3	Q3	Is this information system able to meet the needs of existing processes?
4	Q4	Is this information system able to provide information about laundry properly to each user?
5	Q5	Is the system created according to needs?

Questionnaires have been distributed to 14 students and 2 admins and the results of the questionnaires are shown in the next table.

Table 4. Table of results of filling out the questionnaire.

No	Question Code	Score				
		5	4	3	2	1
		SS	S	C	KS	STS
1	Q1	5	9	2	-	-
2	Q2	6	10	-	-	-
3	Q3	6	9	1	-	-
4	Q4	6	7	3	-	-
5	Q5	6	9	1	-	-

In the previous table: SS = Strongly agree, S = Agree, C = Enough, K = Less, SK = Very less to get a presentation of the value of display satisfaction and prospective users using the formula: $Z = q / (\sum n)$ 100%. Z is the percentage value of satisfaction, q is the number of respondents' satisfaction answers, and n is the total number of respondents. User satisfaction presentation will be shown in the next table.

Table 5. User convenience table.

	Question Code	Score				
		5	4	3	2	1
		SS	S	C	KS	STS
1	Q1	31.25 %	56.25 %	12.5%	-	-
2	Q2	37.50 %	62.25 %	-	-	-
3	Q3	37.50 %	56.25 %	6.25 %	-	-
4	Q4	37.50 %	43.75 %	18.75 %	-	-
5	Q5	37.50 %	56.25 %	6.25 %	-	-

Based on the first question, it can be concluded that 31.25% of all respondents answered strongly agree and 56.25% of respondents answered agree that the appearance of the information system created is interesting. In the second question, 37.50% of respondents answered strongly agree and 62.25% of respondents answered agree that the system made is easy to use. In the third question, 37.50% of respondents answered strongly agree and 56.25% of respondents answered that they agreed that the system had met the needs of the existing process. In the fourth question, as many as 37.50% of respondents answered strongly agree and 43.75% of respondents answered agree that the information system provides information to users well. In the fifth question, 37.50% of respondents answered strongly agree and 56.25% answered agree that this system was made according to needs.

4. CLOSING

The results of the black box test show that the information system created can run well. Satisfaction of prospective users shows that 91.25% of users agree that they are satisfied (36.25% answered strongly agree, 55.00% average respondents answered agree) and the remaining 8.25 respondents answered quite. The results of the questionnaire filled in by the respondents agreed with the making of this system. So it can be concluded that the KH Mas Mansyur international laundry information system can provide information display and follow existing needs.

This information system is not perfect. Further development is needed to improve this information system. And continuous innovation will be required. The

latest innovations around web services, utility computing, or other technologies will radically increase the agility of business processes and market responsiveness (Paul P. Tallon, 2007) system development by using barcodes in student data input in the process of adding transactions will speed up the data input process because the Core Data management of an information system is one of the most important parts to develop (Carlo A. Curino, Hyun J. Moon, Letizia Tanca, Carlo Zaniolo Schema, 2008). The addition of additional image features in the missing clothes menu will make it easier for students to recognize an outfit.

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